

Practitioner's Docket No. U 015416-8

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Göran SUNDHOLM**

Application No.: 10/511,938

Group No.: 3752

Filed: October 19, 2004

Examiner: N/A

For: **METHOD AND APPARATUS FOR THE CONTROL OF A SPRAYING APPARATUS**

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR REFUND

Deposit Account 12-0425 was charged small entity \$180.00 for multiple dependent claims (Fee Code 2616) and \$150.00 for extra claims over twenty (Fee Code 2615) on May 24, 2005 (Control Nos. 11 & 12).

CERTIFICATION UNDER 37 C.F.R. 1.8(a) and 1.10*

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37 C.F.R. 1.8(a)

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37 C.F.R. 1.10*

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02 FC:2616 100.00 CR
☐ transmitted by facsimile to the Patent and Trademark Office 571-273-8300.

Submission date: 11/16/2005 PROOKER
08/24/2005 MCLAYBRU 00339985 120425 1051193
FC:2615 150.00 CR

Date: August 5, 2005

Signature

WILLIAM R. EVANS

(type or print name of person certifying)

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"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted as a matter of course." Notice of Oct. 24, 1996, 40 Fed.

However, no claim fee charge was authorized and according to 37 CFR 1.492(g), if additional fees are required they only must be paid prior to the expiration of the term period set for reply by the Office in any Notice of Fee deficiency, which has not issued.

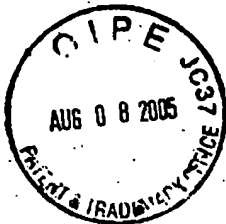
In the meantime, a Preliminary Amendment (copy attached) cancelling the multiple dependent claims was filed on June 16, 2005.

Therefore, a refund of \$230.00 for the overcharge for four extra total claims (small entity) \$50.00 and \$180.00 for multiple dependent claims by credit to Deposit Account 12-0425 is requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'W. Evans', written over a horizontal line.

WILLIAM R. EVANS
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U 015416-8

June 16, 2005

IN RE: GÖRAN SUNDHOLM

APPLICATION NO.: 10/511,938

GROUP NO.: 3752

FILED: OCTOBER 19, 2004

EXAMINER: N/A

FOR: METHOD AND APPARATUS FOR THE CONTROL OF A SPRAYING APPARATUS

PRELIMINARY AMENDMENT

FILED _____

WRE/gm



U 015416-8

June 16, 2005

IN RE: GÖRAN SUNDHOLM

APPLICATION NO.: 10/511,938

GROUP NO.: 3752

FILED: OCTOBER 19, 2004

EXAMINER: N/A

FOR: METHOD AND APPARATUS FOR THE CONTROL OF A SPRAYING APPARATUS

TRANSMITTAL OF STATEMENT(S) TO ESTABLISH OR MAINTAIN SMALL ENTITY STATUS: STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(C-F) AND 1.27(B-D)).

FILED _____

WRE/gm



U 015416-8

June 16, 2005

IN RE: GÖRAN SUNDHOLM

APPLICATION NO.: 10/511,938

GROUP NO.: 3752

FILED: OCTOBER 19, 2004

EXAMINER: N/A

FOR: METHOD AND APPARATUS FOR THE CONTROL OF A SPRAYING APPARATUS

SUBSTITUTE DECLARATION AND POWER OF ATTORNEY: DECLARATION AND POWER OF ATTORNEY.

FILED _____

WRE/gm



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Göran SUNDHOLM

Application No.: 10/511,938

Group No.: 3752

Filed: October 19, 2004

Examiner: N/A

METHOD AND APPARATUS FOR THE CONTROL OF A SPRAYING APPARATUS

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Please amend the above identified application as follows.

CERTIFICATION UNDER 37 C.F.R. 1.8(a) and 1.10*

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TRANSMISSION

☐ transmitted by facsimile to the Patent and Trademark Office.

Date: June 16, 2005

Signature 

William R. Evans

(type or print name of person certifying)

***WARNING:** Each paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

IN THE CLAIMS

1. (Original) Method for controlling a spraying apparatus, especially a spraying apparatus designed for the humidification of intake air, said apparatus comprising at least two spraying nozzles (1a, 1b, 1c, 1d) for spraying a liquid into the intake air, characterized in that, in accordance with the control system's instructions, when the required amount of liquid to be supplied through the nozzles increases, liquid flow passages are opened for more nozzles (1a, 1b, 1c, 1d) and/or the liquid flow is directed into a flow passage leading to a nozzle that permits a larger liquid flow through it per unit of time, and when the required amount of liquid to be supplied through the nozzles decreases, liquid flow channels are closed at least for some of the nozzles (1a, 1b, 1c, 1d) and/or the liquid flow is directed to a nozzle that permits a smaller liquid flow is through it per unit of time.
2. (Original) Method according to claim 1, characterized in that a substantially constant amount of liquid per unit of time is fed into a supply pipe (4) and at least a portion of the liquid quantity supplied that is not directed to the nozzles is conveyed into a return pipe (5).
3. (Currently Amended) Method according to claim 1 ~~or 2~~, characterized in that a constant pressure is maintained in the supply pipe (4), regardless of the number of nozzles injecting.
4. (Currently Amended) Method according to ~~any one of claims~~ claim 1 -3, characterized in that the k-value (resistance) of at least one of the channels leading into the return pipe (5) is adjusted to make it correspond to the k-value (resistance) of the nozzles in

closed state.

5. (Currently Amended) Method according to ~~any one of claims~~ claim 1 -4, characterized in that the value of the sum of the activated (open) k-values is kept substantially constant.
6. (Currently amended) Method according to ~~any one of claims~~ claim 1 -5, characterized in that the liquid to be fed into the return line is conveyed through at least one return channel (3a, 3b, 3c, 3d) into the return pipe.
7. (Currently Amended) Method according to ~~any one of claims~~ claim 1 -6, characterized in that the return channel (3a, 3b, 3c, 3d) is provided with at least one valve element (A2, B2, C2, D2), which is controlled on the basis of impulses given by the control system.
8. (Currently Amended) Method according to ~~any one of claims~~ claim 1 -7, characterized in that, in at least one return channel (3a, 3b, 3c, 3d), a throttle element (17a, 17b, 17c, 17d) or equivalent having a k-value adapted to correspond to the k-value of the at least one closed nozzles is used.
9. (Currently Amended) Method according to ~~any one of claims~~ claim 1 -8, characterized in that the amount of liquid to be supplied through the nozzles (1a, 1b, 1c, 1d) is adjusted as a function of the engine load.
10. (Currently Amended) Method according to ~~any one of claims~~ claim 1 -10,

characterized in that a liquid mist, especially a water mist is injected through the nozzles (1a, 1b, 1c, 1d).

11. (Currently Amended) Method according to ~~any one of claims~~ claim 1 =10, characterized in that the liquid mist is injected at a pressure of 10-300 bar.

12. (Currently Amended) Method according to ~~any one of claims~~ claim 1 =11, characterized in that the maximum droplet size of the liquid mist injected is typically 200 micrometers.

13. (Currently Amended) Method according to ~~any one of claims~~ claim 1 =12, characterized in that a second medium is conveyed to the nozzle when in it is in closed state to prevent clogging of the nozzle.

14. (Original) Apparatus for supplying a liquid mist into the intake air of an engine, said apparatus comprising at least two nozzles for spraying a liquid mist liquid into the air intake duct, characterized in that the apparatus comprises at least two feed channels (2a, 2b, 2c, 2d) with valve elements (A1, B1, C1, D1) arranged in them, a control system giving impulses on the basis of which the aforesaid valve elements are opened and closed, and liquid supply means (4, 6, 10) for supplying an aqueous liquid into a feed channel (2a, 2b, 2c, 2d) leading to at least one nozzle.

15. (Original) Apparatus according to claim 14, characterized in that the apparatus further comprises an outlet pipe (5) and at least one outlet channel (3a, 3b, 3c, 3d), through

which a connection to the outlet pipe from the supply pipe (4) leading to the nozzles can be opened and closed.

16. (Currently amended) Apparatus according to claim 14 ~~or 15~~, characterized in that the outlet channel (3a, 3b, 3c, 3d) is provided with a valve element (A2, B2, C2, D2) arranged to close when the corresponding valve element (A1, B1, C1, D1) in the feed channel (2a, 2b, 2c, 2d) leading to the nozzle opens and to open when the valve element in the corresponding feed channel leading to the nozzle closes.

17. (Currently amended) Apparatus according to ~~any one of claims~~ claim 14 -6, characterized in that the apparatus comprises means for keeping the flow resistance (sum of k-values) constant.

18. (Currently amended) Apparatus according to ~~any one of claims~~ claim 14 -17, characterized in that the apparatus comprises a number of feed channels (2a, 2b, 2c, 2d) leading to the nozzles and a corresponding number of return channels (3a, 3b, 3c, 3d) as well as valve elements for each feed channel and return channel, each feed channel - return channel pair being controlled together so that when the feed channel opens, the return channel closes and vice versa.

19. (Currently amended) Apparatus according to ~~any one of claims~~ claim 14 -18, characterized in that the return channels are provided with a throttle element (3a', 3b', 3c', 3d') or equivalent.

20. (Currently amended) Apparatus according to ~~any one of claims~~ claim 14 =19, characterized in that the liquid supply means comprise a liquid source (10) and a pump (6).
21. (Currently amended) Apparatus according to ~~any one of claims~~ claim 14 =20, characterized in that the control system has been adapted to control the apparatus on the basis of engine load.
22. (Currently amended) Apparatus according to ~~any one of claims~~ claim 14 =21, characterized in that the apparatus comprises means (33) for regulating the temperature of the first pressure medium.
23. (Currently amended) Apparatus according to ~~any one of claims~~ claim 14 =22, characterized in that the apparatus comprises means (20, 21, 25a, 25b, 25c, 25d) for conveying a second pressure medium to a nozzle (1a, 1b, 1c, 1d) whose feed channel is in closed state, to prevent clogging of the nozzle.
24. (Currently amended) Apparatus according to ~~any one of claims~~ claim 14 =23, characterized in that it comprises means (34, 36, 14) for filtering at least the first pressure medium.

REMARKS

The above amendatory action taken in the claims is solely for the purpose of avoiding claim fees that would otherwise accrue due to the presence of multiple dependent claims.

Respectfully submitted,



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